

Planet Orbit Circumference Math Standards

1. **Make sense of problems and persevere in solving them.** Mathematically proficient students can start by explaining their thought processes in solving a problem and representing it in several ways and have they perseverance of trying several approaches in finding a solution.

Students will use tangible items to learn the benefit of knowing circumference and diameter so that they can use their new knowledge to find the intangible orbit size of planets. In addition, students will be able to again use their circumference and diameter knowledge to see if their cars will be able to go through redwood trees.

2. **Reason abstractly and quantitatively.** Mathematically proficient students are able to translate situations into symbols and manipulate the symbols in everyday life. In addition, the student will create a representation of the problem at hand while considering the units, the meaning of quantities, and using different properties of operations and objects.

While students are exploring planet orbits figures, they should see a pattern of how circular the planet orbits may seem or may not seem by how close the figures appear close to 3.14.

3. **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students explain their own assessment of the situation. Students can also explain other students' solutions with proper vocabulary and identify strengths and weaknesses of the solution.

After students have found the planets orbit, they will be able to identify which planets have more circular orbits versus the planets that may not have circular orbits and they should be able to state why they believe those planets have circular orbits based on their knowledge of 3.14.

4. **Model with mathematics.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. As they work to solve a problem, mathematically proficient students use models and symbols to represent and solve a problem, and accurately explain the solution.

Students should begin to see a relationship between the diameter and circumference while measuring the tangible objects and planet orbits.

5. **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem and will select the ones that can be used to solve the problem and then explain their reasoning for the tool selection.

Students will need to use appropriate methods of measurement, such as a ruler, string, a tape measure, and calculator to measure the tangible items. For the intangible items, the data will be supplied, but the students will need a calculator to complete the information.

6. **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions, vocabulary, and symbols in discussion with others and in their own reasoning.

To find such massive or minute figures, it is essential that students understand the importance of correct units of measurements, powers of ten, and 3.14.

7. **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure to be able to simplify solutions.

Students should begin to see a definite relationship between the diameter and circumference while measuring the tangible objects and planet orbits and how they relate to 3.14.

8. **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice patterns through repetitive calculations and try to find general methods and shortcuts.

Students should begin to see a definite relationship between the diameter and circumference while measuring the tangible objects and planet orbits and how they relate to 3.14.